Claim Amendments

Please amend the claims of the subject application as follows:

1. (currently amended) A method for inspection of ~~pipelines~~ a pipeline having internal restrictions, comprising the steps of:

affixing a collapsible excitation coil comprising a plurality of electrically interconnected collapsible excitation coil segments to a first end of an inspection pig structure, the inspection pig structure including an instrumentation housing;

affixing a collapsible sensor array to a second end opposing the first end of the inspection pig structure;

passing the inspection pig structure with the affixed collapsible excitation coil and the affixed collapsible sensor array through the pipeline having internal restrictions;

collapsing the excitation coil and the sensor array from an expanded deployed position for enabling the inspection pig structure with the affixed collapsible excitation coil and sensor array to traverse ~~an~~ a first internal restriction in the pipeline; and

returning the affixed collapsible excitation coil and sensor array to an expanded deployed position when the first internal restriction has been traversed.

2. (original) The method of claim 1, further comprising the steps of:

electrically activating the collapsible excitation coil by excitation circuits in the instrumentation housing; and

detecting a remote field eddy current signal by the collapsible sensor array electrically connected to detection circuits in the instrumentation housing for determining defects in a wall of the pipeline.

3. (canceled)

4. (currently amended) The method of claim ~~3~~ 1, wherein the step of affixing a plurality of electrically interconnected collapsible excitation coil segments comprises the steps of:

pivotally hinging each of the plurality of electrically interconnected collapsible excitation coil segments at a center element, the center element being connected to the first end of the inspection pig structure; and

spring-loading each excitation coil segment at a center element hinge for maintaining an unobstructed fully expanded deployed position of each excitation coil segment adjacent to an internal wall of the pipeline.

5. (currently amended) The method of claim 4, further comprising the steps of:

positioning an arm on each excitation coil segment, ~~the arm~~ each arm on each excitation coil segment having a roller affixed on ~~the~~ each arm opposite ~~the~~ each excitation coil segment;

collapsing and interleaving ~~the~~ each excitation coil ~~segments~~ segment for reducing ~~the~~ a diameter of the excitation coil when ~~the rollers encounter~~ a first roller affixed on a first arm encounters a first internal pipeline ~~restrictions~~ restriction; and

returning ~~the~~ each collapsed excitation coil ~~segments~~ segment to a fully expanded deployed ~~positions~~ position when the ~~rollers do~~ first roller does not encounter the first internal ~~restrictions~~ pipeline restriction.

6. (currently amended) The method of claim ~~3~~ 1, further comprising the step of electrically connecting the excitation coil segments to excitation circuits in the instrumentation housing.

7. (currently amended) The method of claim ~~3~~ 1, wherein the step of affixing a plurality of electrically interconnected collapsible excitation coil segments further comprises:

electrically interconnecting the excitation coil segments for flowing a current in an outgoing leg element of a first coil segment in an opposite direction of a current in an adjacent return leg element of a second adjacent coil segment for canceling resultant magnetic fields; and

electrically interconnecting the excitation coil segments for flowing a current in a periphery element opposite a center element of each segment in a same circumferential direction.

8. (currently amended) The method of claim ~~3~~ 1, wherein the step of affixing a plurality of electrically interconnected collapsible excitation coil segments produces a magnetic field substantially equivalent to a magnetic field produced by a non-collapsible excitation coil.

9. (original) The method of claim 1, wherein:

maximum diameters of a fully collapsed excitation coil, a fully collapsed sensor array, and the inspection pig structure are less than a minimum internal diameter of the pipeline having internal restrictions for enabling the system to traverse internal restrictions in the pipeline; and

maximum diameters of a collapsible excitation coil in a fully expanded deployed position and a collapsible sensor array in a fully expanded deployed position are determined by an internal diameter of the pipeline having internal restrictions.

10. (original) The method of claim 1, wherein the step of affixing a collapsible sensor array further comprises the step of affixing a plurality of sensors positioned circumferentially on an internal diameter of the pipeline and electrically connecting the sensors to detection circuits in the instrumentation housing.

11. (currently amended) The method of claim 10, wherein the step of affixing a plurality of sensors of the sensor array comprises the steps of:

pivotally positioning each sensor of the plurality of sensors to a sensor pivot point on a pivot arm;

pivotally connecting a structural member pivot point opposite the sensor pivot point on the pivot arm to the second end of the inspection pig structure;

spring-loading ~~each~~ the pivot arm at the structural member pivot point for maintaining an unobstructed fully expanded deployed position of ~~each~~ the pivot arm;

collapsing the sensor array sensors for reducing ~~the~~ a diameter of the of the sensor array when the sensors encounter internal pipeline restrictions; and

returning the sensor array sensors to expanded deployed positions when the sensors do not encounter the internal pipeline restrictions.

12. (currently amended) A system for inspection of ~~pipelines~~ a pipeline having internal restrictions, comprising:

means for affixing a collapsible excitation coil comprising a plurality of electrically interconnected collapsible excitation coil segments to a first end of an inspection pig structure, the inspection pig structure including an instrumentation housing;

means for affixing a collapsible sensor array to a second end opposing the first end of the inspection pig structure;

means for passing the inspection pig structure with the affixed collapsible excitation coil and the affixed collapsible sensor array through ~~a~~ the pipeline having internal restrictions;

means for collapsing the excitation coil and the sensor array from an expanded deployed position for enabling the inspection pig structure with the affixed collapsible excitation coil and sensor array to traverse ~~an~~ a first internal restriction in the pipeline; and

means for returning the affixed collapsible excitation coil and sensor array to an expanded deployed position when the first internal restriction has been traversed.

13. (original) The system of claim 12, further comprising:

excitation circuits in the instrumentation housing for electrically activating the collapsible excitation coil; and

detection circuits in the instrumentation housing electrically connected to the collapsible sensor array for detecting a remote field eddy current signal by the collapsible sensor array for determining defects in a wall of the pipeline.

14. (original) The system of claim 12, wherein the means for affixing the plurality of electrically interconnected collapsible excitation coil segments to a first end of an inspection pig structure comprises:

hinges for pivotally connecting a center element of each coil segment to the first end of the inspection pig structure; and

springs for maintaining an unobstructed fully deployed position of each excitation coil segment adjacent to an internal wall of the pipeline.

15. (currently amended) The system of claim 14, further comprising;

an arm positioned on each excitation coil segment, each arm on each excitation coil segment having a roller affixed on ~~the~~ each arm opposite ~~the~~ each excitation coil segment;

~~the~~ each excitation coil ~~segments~~ segment being reduced in diameter by collapsing and interleaving ~~the~~ each coil ~~segments~~ segment when ~~the rollers encounter~~ a first roller affixed on a first arm encounters a first internal pipeline ~~restrictions~~ restriction; and

~~the~~ each excitation coil ~~segments~~ segment being returned to a fully expanded deployed ~~positions~~ position when the ~~rollers do~~ first roller does not encounter the first internal ~~restrictions~~ pipeline restriction.

16. (original) The system of claim 12, wherein:

the plurality of electrically interconnected collapsible coil segments are electrically interconnected for flowing a current in a periphery element opposite a center element of each segment in a same circumferential direction; and

the plurality of electrically interconnected collapsible coil segments are electrically interconnected for flowing a current in an outgoing leg element of a first coil segment in an opposite direction of a current in an adjacent return leg element of a second adjacent coil segment for canceling resultant magnetic fields.

17. (original) The system of claim 12, wherein the plurality of electrically interconnected collapsible coil segments produce a magnetic field substantially equivalent to a magnetic field produced by a non-collapsible excitation coil.

18. (original) The system of claim 12, wherein:

maximum diameters of a fully collapsed excitation coil, a fully collapsed sensor array, and the inspection pig structure are less than a minimum internal diameter of the pipeline having internal restrictions for enabling the system to traverse internal restrictions in the pipeline; and

maximum diameters of a collapsible excitation coil in a fully expanded deployed position and a collapsible sensor array in a fully expanded deployed position are determined by an internal diameter of the pipeline having internal restrictions.

19. (original) The system of claim 12, wherein the collapsible sensor array further comprises a plurality of sensors positioned circumferentially on an internal diameter of the pipeline, the sensors being electrically connected to detection circuits in the instrumentation housing.

20. (currently amended) The method of claim 19, wherein the sensor array comprises:

each of the plurality of sensors of the sensor array being pivotally connected to a sensor pivot point on a pivot arm;

a structural member pivot point opposite the sensor pivot point on the pivot arm being connected to the second end of the inspection pig structure;

~~each~~ the pivot arm being spring-loaded at the structural member pivot point for maintaining an unobstructed fully expanded deployed position of ~~each~~ the pivot arm;

the sensor array sensors being collapsed for reducing the diameter of the of the sensor array when the sensors encounter internal pipeline restrictions; and

the sensor array sensors being returned to expanded deployed positions when the sensors do not encounter the internal pipeline restrictions.

21. (currently amended) A system for inspection of ~~pipelines~~ a pipeline having internal restrictions, comprising:

an inspection pig structure including an instrumentation housing;

a collapsible excitation coil including a plurality of electrically interconnected collapsible coil segments affixed to a first end of the inspection pig structure;

a collapsible sensor array including a plurality of sensors affixed to a second end of the inspection pig structure opposite the first end;

excitation circuits in the instrumentation housing electrically connected to the collapsible excitation coil for exciting the excitation coil to produce a magnetic field outside of a wall of the pipeline; and

detector circuits in the instrumentation housing electrically connected to the collapsible sensor array for detecting remote field eddy currents to determine defects in the wall of the pipeline.

22. (original) The system of claim 21, wherein:

maximum diameters of a fully collapsed excitation coil, a fully collapsed sensor array, and the inspection pig structure are less than a minimum internal diameter of the pipeline having internal restrictions for enabling the system to traverse internal restrictions in the pipeline; and

maximum diameters of a collapsible excitation coil in a fully expanded deployed position and a collapsible sensor array in a fully expanded deployed position are determined by an internal diameter of the pipeline having internal restrictions.